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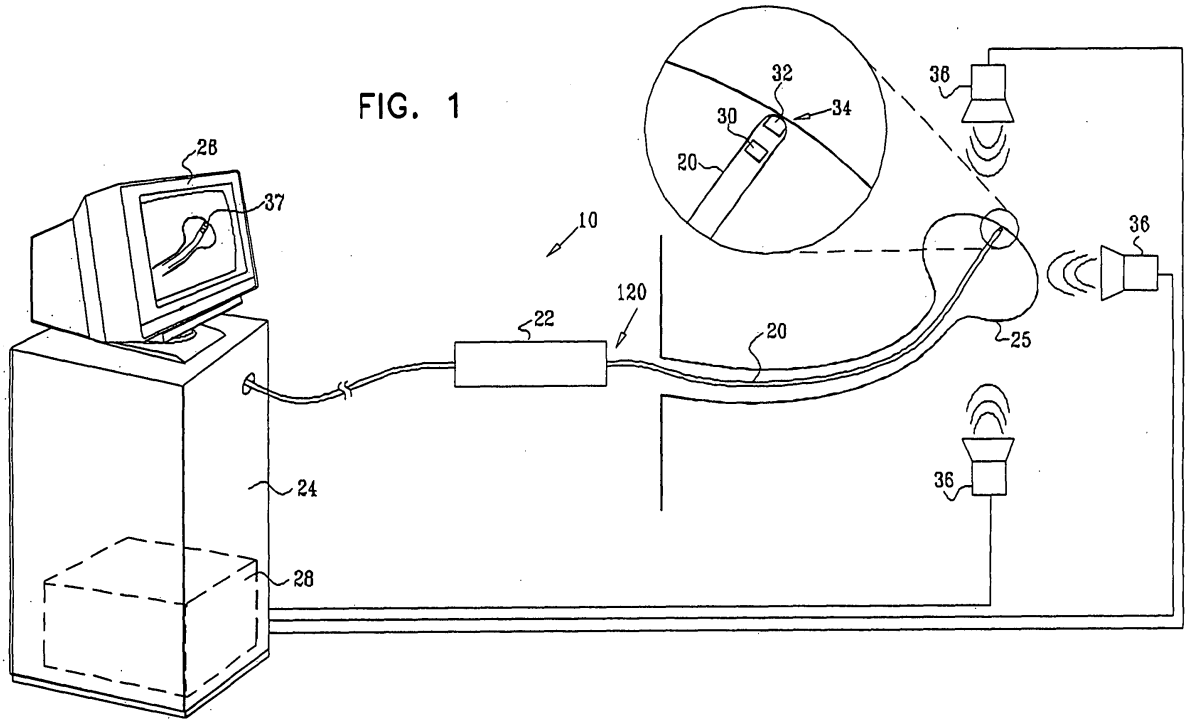
(54) **Robotically guided catheter**

(57) Apparatus is provided for use with a steerable catheter that includes a thumb control adapted to control a deflection of a distal tip of the catheter. The apparatus includes a robot, including an end-effector, adapted to be coupled to the thumb control, and a controller, adapted to drive the end-effector to deflect the distal tip by manipulating the thumb control.

FIG. 1



EP 1 915 968 A3

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PARTIAL EUROPEAN SEARCH REPORT

under Rule 62a and/or 63 of the European Patent Convention. This report shall be considered, for the purposes of subsequent proceedings, as the European search report

Application Number
EP 08 07 5070

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 5 492 131 A (GALEL ZEV [US]) 20 February 1996 (1996-02-20) * column 4, line 14 - column 5, line 8; figure 1 * -----	1-12	INV. A61B19/00
A	WO 02/074178 A2 (BROCK ROGERS SURGICAL INC [US]; BROCK DAVID L [US]; LEE WOOJIN [US]; A) 26 September 2002 (2002-09-26) * figure 13 * -----	1-12	
A,D	US 6 210 362 B1 (PONZI DEAN M [US]) 3 April 2001 (2001-04-03) * abstract; figure 1 * -----	1-12	
A	US 6 400 981 B1 (GOVARI ASSAF [IL]) 4 June 2002 (2002-06-04) * abstract * -----	1-12	
X	US 5 431 645 A (SMITH ET AL) 11 July 1995 (1995-07-11) * column 7, line 30 - line 53; figures 3,4 * ----- -/--	13-23	

TECHNICAL FIELDS SEARCHED (IPC)

A61B
A61M

INCOMPLETE SEARCH

The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC so that only a partial search (R.62a, 63) has been carried out.

Claims searched completely :

Claims searched incompletely :

Claims not searched :

Reason for the limitation of the search:

see sheet C

1

Place of search	Date of completion of the search	Examiner
The Hague	11 February 2011	Mayer-Martenson, E

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons
.....
& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04E07)

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PARTIAL EUROPEAN SEARCH REPORT

Application Number
EP 08 07 5070

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (IPC)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X Y	EP 0 943 293 A (B. BRAUN MELSUNGEN AG) 22 September 1999 (1999-09-22) * paragraphs [0016], [0017]; figures 1,2 * -----	13-17, 19-23 18,24	
Y	WO 97/12557 A (KELLEHER, BRIAN, S) 10 April 1997 (1997-04-10) * column 30, paragraph 2; figure 36 * -----	18,24	
A	US 5 562 619 A (MIRARCHI ET AL) 8 October 1996 (1996-10-08) * abstract; figures 8,9 * -----	13,19	
A	US 6 083 170 A (BEN-HAIM ET AL) 4 July 2000 (2000-07-04) * column 8, line 58 - column 9, line 11 * -----	1,17,23	TECHNICAL FIELDS SEARCHED (IPC)

1

EPO FORM 1503 03.82 (P04C10)

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INCOMPLETE SEARCH SHEET C

Application Number
EP 08 07 5070

Claim(s) completely searchable:
1-24

Claim(s) not searched:
25-28

Reason for the limitation of the search (non-patentable invention(s)):

Article 52 (4) EPC - Method for treatment of the human or animal body by surgery

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Application Number
EP 08 07 5070

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☒ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-12

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

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LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 08 07 5070

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-12

   robotically steerable catheter with position sensor

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2. claims: 13-24

   robot for steering catheter optimized for hand operation

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 08 07 5070

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

11-02-2011

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EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82